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Soil Conservation



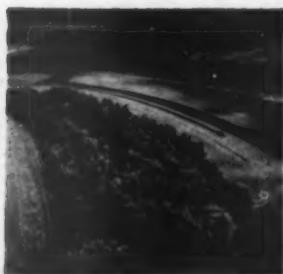
SOIL CONSERVATION SERVICE • U. S. DEPARTMENT OF AGRICULTURE



Growth Through Agricultural Progress

"We must look at conservation in the light of the interdependency of all programs, whether they be in water, forestry, game and fish, soil conservation, mineral development or recreation."

—ORVILLE L. FREEMAN



COVER PICTURE.—This 18-year-old farm woodlot in Carver County, Minnesota, illustrates how trees fit into the pattern of good conservation land use.

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Soil Conservation

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FRANK B. HARPER, Editor

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Conservation on Farm Woodlands

By Donald A. Williams

MORE of the Nation's farm-land is in trees than is in any other crop except grass—or nearly one-fifth of the total farm acreage. Soil and water conservation on woodland accordingly is a basic part of conservation farm planning and land use, as it has been from the start nearly thirty years ago.

Most of the nearly 3½ million farmers who own woodland are in soil conservation districts, through which landowners obtain the technical help of the Soil Conservation Service in land-use planning and conservation treatment of cropland, pastureland, woodland, and wildlife areas. In 1960, nearly half of all the trees planted on private lands were on farms and ranches cooperating with districts, or almost a million acres. This represents tremendous progress toward meeting the needs of the Nation!

As interest continues to mount in farm woodlands and windbreaks, farmers and ranchers are requiring additional technical help from both public and private sources, including that of the Service in relating soils information to the growing of wood crops as part of overall conservation and land-use planning. When technical assistance in conservation on woodlands is not available from State forestry agencies, and where it is needed, the Service provides it to private landholders as a necessary part of a conservation plan for a land unit. As two-thirds of all farm woodlands are less than 40 acres each in size, this very often is the farmers' primary source of such help.

Our field technicians are trained by woodland conservationists and

forestry specialists to help farmers in selecting land suited for tree planting and with other measures involving trees and shrubs. All of these are correlated with the complete conservation farm plan. This approach is dictated by at least two practical considerations:

1.—Lands not suitable for cultivation, or sometimes even for high-producing hay or pasture, often are ideal for growing trees, which permanently protect such lands from erosion and conserve water.

2.—Timber has been shown by research and experience to be the most profitable crop for those lands on which the interpretation of soils indicates trees to be the best-suited plants to grow on them. In other words, a good wood crop will pay out better on such soils than will low-yielding cultivated or grass crops, even though the latter can be grown on them. This rating of soils for the production of wood crops has been one of the most significant recent contributions to conservation on woodlands.

When we consider that nearly half of the privately owned commercial forest land in the United States is on farms, the importance of conservation on farm woodlands becomes apparent. As part of the Nation's total program of farm and ranch conservation planning and action, it means safeguarding that half of our timber resources and contributing proportionately to sustaining related agricultural, community, and industrial economies.

A look at the figures on what soil conservation district cooperators have done in conservation on woodlands points up the impact of their successful efforts in this as-

pect of resource conservation. Assuming the same rates of accomplishments for this fiscal year as those achieved last fiscal year, they will have planted about 8¾ million acres of trees by June 30, 1961, in addition to some 43,000 miles of field windbreaks and nearly 9 million rods of hedgerows.

Comparable figures show approximately 19½ million acres of such woodland improvement as thinning, harvest cutting, brush control, and pruning; and 71¾ million acres of woodland protection measures like fencing, grazing control, firebreaks, and erosion control. These accomplishments, of course, reflect the combined impact of cooperative action: education, technical services, credit, cost sharing, fire control, etc., but, perhaps above all, local leadership and responsibility.

A still bigger job of conservation on farm woodlands and tree planting lies ahead. The recently completed National Inventory of Soil and Water Conservation Needs shows that, based on present conditions of the 435 million acres expected to be in non-Federal forest and woodland by 1975, more than 150 million acres needs timber stand improvement and more than 70 million acres needs planting.

The President's message on natural resources directed the Secretary of Agriculture to develop a program of increased assistance to private woodland owners, in cooperation with State agencies. The job remaining can best be achieved through the cooperative efforts of landowners and operators, local and State governments, and of agencies equipped to help them.

Conservation Tree Farming

Is a Way of Life With the Wilsons

By Herbert F. Gaines

The Francis Wilsons' tree farm in western Washington is a working example of the success that comes from fitting the right kind of farming to the land instead of trying to make the land grow crops for which it is not suited.

It is the "Wilsons," plural, because the whole family has made a teamwork project of building up the farm since they bought 680 acres of logged-over land in Cowlitz County in 1948 and soon realized it wasn't suitable for the conventional farming they had planned. Francis, Mrs. Wilson, and the 5 of their 9 children who had a hand in remaking the farm during that dozen-odd years share satisfaction in their joint accomplishments. As Francis says:

"My tree farm gives me peace of mind and a feeling of personal accomplishment."

The Wilsons have good reason to

be proud: Their place was chosen Cowlitz County Tree Farm of the Year for 1959; they have been marketing Christmas trees for several years; and the farm has enabled them to rear their large family despite costly injuries suffered by Francis and two sons, Robert and Bill. When the boys were hurt while salvage logging, Francis sold 400 acres to meet the bills, but later bought another 100 acres, bringing his present holding up to 380 acres.

The Wilson land today contrasts sharply with the original purchase of burned-over, brushy land on the western slope of the Cascade Mountains. Francis was working with a construction company in the Portland-Vancouver area then, and his wife and the children took care of the job of getting settled on the farm, which closer inspection revealed to be cut up by numerous

draws and creeks and plagued by rock outcrops.

It clearly was not a tillable farm land; but it was timber-growing land!

The Wilsons promptly became cooperators with the Cowlitz Soil Conservation District, and a soil survey was made by the Soil Conservation Service. It showed most of their land to be in capability classes IV to VII, with only a small amount of creek bottomland being in classes II and III and suitable for farming. This land is kept in hay and pasture for feeding a small herd of beef and dairy cattle.

Francis was injured on the job that same year, and found he no longer could follow construction work. That was when he decided definitely on tree farming, and the family enthusiastically agreed.

"We'll operate just like the big timber companies," Mrs. Wilson declared. She, with the children and a brother, already had gained experience in salvaging slab from one of several piles left on the farm by mills that had operated in the valley years before. During 1948 and 1949, they cut and sold more than 4,000 cords for pulp.

Wilson's sons started planting trees in the winter of 1949, when they put out 15,000 Douglas fir seedlings, and have hand-planted trees every year since—75,000 one year and nearly half a million all together. The Wilsons have drawn upon technical assistance from Soil Conservation Service technicians, the Vocational Agriculture instructor, the county agent, and the



The Wilsons' tree farm lies here in the Little Kalama River valley.

Note:—The author is work unit conservationist, Soil Conservation Service, Kelso, Wash.



Bill Wilson with spool alder removed from land to be scarified and cleared of brush for planting to Douglas fir.

State Farm Forester. They get their planting stock from local timber companies, the County Extension Service, and the State Department of Natural Resources. Some planting has been done with hired crews.

They also have tied in the salvage of "left behind" logs with their planting program, getting from their sale operating capital and, in the same operation, scarifying the land with a bulldozer and land-clearing blade preparatory to planting it. These Douglas fir logs were left when the country was originally logged. It costs about \$18 a thousand to get them out of the brush, yard, and haul them to market. The price received for these logs has varied over the years from \$24 to \$40 a thousand board-feet. They salvaged 300,000 board-feet of these logs in 1960 alone, and Wilson says, "I am confident we have salvaged over three million board-feet in the past 10 years."

Before salvage, the Wilsons remove red alder of marketable size, selling the large, mature trees for saw logs and medium-size trees for pulp. Smaller alder is sold to a

paper-spool market at a profit of about 8¢ an 8-foot stick, for material that has to come out in preparation for planting Douglas fir. Scarification costs run \$30 to \$35 an acre, when they use their own 'dozer. As a precaution against

trees which may not survive, and for an early income from Christmas trees, they overseed with one-fourth pound of treated rodent-repellant seed to the acre.

The Wilsons control brush so it will not suppress the young fir, mostly by hand-slashing with machetes. Francis figures, "I must have slashed 80 to 100 acres, and have worn out 15 to 20 machetes." They also have slashed 15 miles of survey lines.

The planted areas start yielding income from Christmas trees in 6 to 8 years. The Wilsons have harvested 1,500 to 2,000 trees a year, for which they received an average of \$750. They have contracted 9,000 Christmas trees for 1961. Christmas trees removed permit more light to get into the remaining stand.

This is the first thinning. Later thinnings will provide poles and piling. During these early thinnings, final-crop trees are selected on about a 20- by 20-foot spacing, or approximately 120 trees to the acre, as compared to 680 trees planted on an 8- by 8-foot spacing.



Francis Wilson and one of five ponds along his timberland roads. It stores water for fire fighting, is stocked with fish, and has a springboard for swimmers.



Inspection team that chose Francis Wilson as Cowlitz County tree farmer of the year. (Left to right: the late H. William Freed, forest engineer; Hoe Hill, Longview businessman; Wilson; and W. C. Button, Longview banker.)

The end-crop trees are pruned to produce clear 16- to 18-foot logs. On some areas, where the trees are to be marketed for piling and the soils are highly productive for Douglas fir, Wilson permits the trees to remain close together without much thinning.

The Wilsons are always fire conscious. When the woods dry out in the spring, no one smokes after leaving his headquarters. They have put in a 40-mile network of fire trails and logging roads, along which they have built five ponds to supply water for a pump truck in case of fire. Their long-range conservation plan, prepared with the assistance of SCS technicians, calls for two more ponds. The ponds are stocked with fish and used for swimming. There also is good fishing in the Little Kalama River that flows between their house and the barn, and hunting is good on the farm.

In 1957 the Wilsons developed a rock quarry, which to date has brought them in \$7,000. They will show you the work they are doing and explain the technical and other assistance they have received. Conservation tree farming has become a way of life with the Wilsons.

Taking Guesswork Out of Nursery Stock Needs

By A. L. Ford

SOUTH Dakota's soil conservation districts and commercial nurserymen have found through a dozen years of successfully estimating their tree-planting needs in advance that it isn't necessary to fall back upon less desirable substitutions or to end the season with wasteful leftover stocks.

This is one of several States using the estimating method to hold nursery production as closely as possible to planting needs, but South Dakota districts doubt if any others have attained a closer margin of accuracy in their estimates than they have achieved. A record has been kept for each of the 12 years of estimated nursery stock needs compared to the number of trees ordered by the districts. For all years, disregarding individual species, the estimates and actual procurement have been within 5 percent of each other.

Soil conservation districts, or others involved in large-scale tree planting, generally are in position to estimate with reasonable accuracy the species and amounts of stock needed for two or three years ahead. Too often, however, the nurseries have been left in the dark as to these future needs, and, as a consequence, planting stock might not be available when needed. Such lack of information also usually makes necessary wholesale planting-stock substitutions, with less desirable species forced into the planting compositions.

First steps toward a solution to the problem were taken in the late

1940's, through the South Dakota State Farm Forestry Council, composed of representatives of all State and Federal agencies involved in tree planting. The State Nurserymen's Association representative also is a member. At several Council meetings, the soil conservation districts reported that planting stock of the desired kinds and amounts often was not available when needed to carry out their planned programs; and the commercial nursery people pointed out that they were forced to operate pretty much on a hit-and-miss basis, because of not knowing the districts' requirements in advance.

As a result, the Council officially recommended that all agencies engaged in tree planting in the State each fall prepare the best possible estimates for two years in advance, and furnish them to all commercial nurseries in time for their fall seeding operations. Because the soil conservation districts plant approximately 85 percent of all trees in South Dakota, they and the assisting Soil Conservation Service were most concerned. The districts, through their State Supervisors Association, put the plan into motion without delay; and it has continued since, with occasional improvements. This is the way it works:

During August and early September, all district boards of supervisors, assisted by the local SCS work unit conservationists, develop detailed species-by-species estimates on nursery stock needs for the next three years. The longer period was adopted six years ago at the request

Note:—The author is woodland conservationist, Soil Conservation Service, Huron, S. Dak.

of the nurserymen, through the Farm Forestry Council. Criteria considered in arriving at the final planting stock needs figures include: the acreages of completed planting plans ahead, volume of planting accomplished during recent years, types of plantings and the amounts of each, soil types on which plantings are to be made, local district operator demands and preferences, geographical location and climate of the district, existing economic conditions, and current weather situations.

The estimates are officially approved by the district board, but the board specifies that the estimates are not to be construed as actual stock orders. The districts accordingly are not obligated to buy all of the planting stock estimated. The State SCS office cooperates in analyzing and consolidating the districts' estimated stock needs.

When nurserymen, private or public, as in some States, thus are members of the tree planting team, there results a simple but effective means of assuring availability of planting stock in the kinds, quality, and quantity needed by the districts.



Two-year-old field windbreak effectively controlling severe soil blowing.

Other advantages include improved planting compositions by materially reducing forced species substitutions; welcome aid to the nurserymen in more accurately planning their operations; and improved cooperative working relationships among all concerned.

Estimating district tree-planting stock needs in advance (1 year) and submitting the estimates to private

or State nurseries were among the recommendations of the Farm Woodlands and Wildlife Committee of the National Association of Soil Conservation Districts at its February 1961 meeting.

Wildlife Likes His Windbreaks

The 13½ acres of trees and shrubs planted as a farmstead windbreak on the Julius A. Just farm near Berlin, N. Dak., have developed into a welcome wildlife habitat. Just says the tree plantings give added food and cover for the wildlife, and nearby Cottonwood Creek provides a good water supply, in addition to a nearby spring. Hungarian partridges, pheasants, and ducks are among the game birds that now nest on his farm.

Besides the farmstead plantings, Just had planted 12 acres of 3-row field belts on his 1,200-acre farm in the East LaMoure Soil Conservation District by 1960, and planned a 7-row farmstead planting and a field belt on another quarter of land for 1961.

"Visitors are amazed at the improvements that have resulted from these plantings," he reports.



Heel-in storage bed for trees before they are taken to Codington SCD farms for planting.

Tree Crops To Fit the Land

By T. B. Blair

Many thousands of American farmers today are in the fortunate position of being able to choose between trees or other crops for all or part of their land and to get technical guidance in making their decisions.

It was not always so. From the time of this country's settlement to as recently as 50 years ago or less, in some localities, trees had to be cleared from the land in humid areas to make way for the plow. There was no market for all of the wood farmers removed from their land, even for fuel; so they burned it where it was felled and piled.

Today, our ability to grow food and fiber crops has increased to such a degree that we now are more assured of adequate supplies to meet our needs than ever before. Meanwhile, wood has become a salable farm crop in great demand for various uses. The production of wood crops accordingly has brought an inviting opportunity for uncounted landowners in many communities throughout the Nation.

The key question they face is whether their land will grow timber crops more profitably than cultivated or pasture crops. And the key to answering that question is the suitability of the soil for growing timber. Soil-suitability information also helps provide the answers to such other questions as what kind of trees to plant, and how much money it is wise to invest in the undertaking.

Provided as an integral part of soil surveys, which are basic to all

Note.—The author is head woodland conservationist, Soil Conservation Service, Washington, D. C.



Trees, grass, and field crops—all in their place.

sound conservation farm planning and land-use treatment, the woodland interpretation of soils gives the rating of each kind of soil as to: The best kind of trees to grow, how fast they will grow, how much erosion to expect, what limitations exist to getting new stands started, insect or disease problems related to soils that may be encountered, likely damage to the trees from wind, and so on. Woodland soil-site correlation studies are being made on an increasing scale over the country, jointly by soil scientists and woodland conservationists of the Soil Conservation Service and by State forestry agencies and the U. S. Forest Service. Also taken into account in the evaluation are adaptations of research results and information from available local experience and judgment.

Soils of the area studied—which

may be a county or larger area in which the similarity of the soils and other factors indicate certain kinds of trees can be grown under the same conditions—are placed in as many woodland suitability groups as may be practicable. Each group is made up of soils that require the use of similar kinds of conservation practices and other management, and that have comparable potential productivity. These woodland suitability groupings of soils comprise the vehicle by which complete soil-woodland interpretations are presented in county soil survey reports, and in technical materials summarized for the use of technicians working with landowners.

We are beginning to appreciate today how efficiently the American farmer is producing his field crops. Still less understood, however, is the fact that much the same rela-

tive improvements have been made in methods and techniques for producing wood crops.

More and more of today's tree farmers are taking advantage of services available to them from public and private sources. Providing specialized equipment for growing and harvesting the wood crop is one of many services available through soil conservation districts, from contractors, or from other sources. The owner of a small acreage, especially, understandably has little interest in growing wood crops unless he can see his way to a successful outcome for his investment and efforts. He needs all such aids in avoiding "roadblocks."

The basic objective of the public agencies having responsibilities for directly or indirectly assisting farm woodland owners is to help them achieve their objectives. In this endeavor, each public agricultural worker has an opportunity and a responsibility. Growing trees on farmland best suited for that use is a job for the owners; but it is a farm job to which various technologies may need to be applied.

The principal ones are forestry, farm management, economics, soils, and hydrology. Soil conservation and other agricultural workers have an important part to play in contributing to the landowner's understanding of his opportunities to improve his total resources and the income therefrom by making effective use of his woodland fields.

There still are millions of acres of farmland being cultivated that would be more productive and better protected against soil losses if planted to trees. The landowner's choice of land use can best be made by using available technological information. Likewise, the more intensive use of existing woodlands needs similar consideration.

In the past, professional foresters were virtually the only sources of farm woodland information and help. Today, soil conservation and other agricultural technicians share the responsibility of helping the farmer to understand the role of his woodland fields in his whole farming operation. His problems may include those of water supply or management, soil and land use, grazing, wildlife, and

even recreation. All of these can directly affect his handling of his farm woodlands. By the same token, land taxes, total farm investment, land uses, farm roads, and fences all may affect the landowner's attitude toward his woodland and his decisions on how to use his land for growing wood or other crops. Conservation payments for woodland practices and low-interest-rate loans on farm woodlands further increase the need to treat the woodland fields as integral parts of the farm.

Most farmers—95 percent of them—enjoy the additional advantage of being in soil conservation districts. The districts are in position to aid them in making effective use of professional and other services in growing their wood crops. Many soil conservation districts are giving much attention to their co-operators' interest in conservation on woodlands. These districts are in position to do even more with the strength they have or can get through group action, at the local level.

Even though possibly only 2 out of 10 farm woodlands are now producing at a reasonably high rate, we must not underestimate their power to produce, or the farmer's ability to use that power to his advantage. As more markets for farm wood crops are developed, as has happened in different localities, we may expect to see increasing examples of this power to produce. Today, conservation on farm woodland is far advanced beyond what it was 50, 30, or even 10 years ago. It is one of the factors that should encourage the other 8 farm woodland owners to get into their woods and see what they need to do to make them an effective part of their total farm operation.



Trees and shrubs fit into the conservation farming pattern.

As of January 1, 1961, there were 19,341 Certified Tree Farms in the United States, totaling 54,524,830 acres.

Sandhills Ranchers Go For Trees

By Lorenz F. Bredemeier, Walt Ekdahl, and Donell D. Sylvester

SOIL conservation district ranchers in the sandhills of western Nebraska's panhandle are getting results from planting trees that would be the envy of their fathers and grandfathers who put in plantations under the incentive of various early-day timber acts.

This area has been noted since pioneer days for its grasslands. One thing needed, from the soil and water conservationists' viewpoint, has been trees—in the right places. Today, as an integral part of their whole-ranch conservation plans, sandhills farmers and ranchers in soil conservation districts are growing more and more trees, for protection of ranch headquarters and farmsteads, livestock, and cultivated fields, and for wildlife.

In addition to planting new windbreaks where they are needed, many ranchers are improving upon the old cottonwood plantings made by the pioneers, including the 5-acre tracts homesteaders once had to plant in order to "prove up" on each 640 acres. Because these old trees have little branching on the



These 9-year-old cedar trees on the Henry Fox ranch in Cherry County are 10 to 12 feet tall and make an effective windbreak.

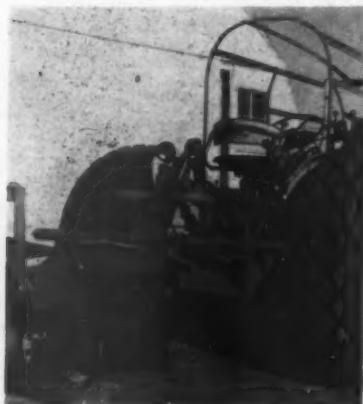
lower trunk and generally have little understory, the ranchers supplement such stands by planting another belt of trees back of them. The new plantings include species that give better protection near the ground and have enough depth to allow a minimum amount of snow to drift through them.

The planting, establishment, and maintenance of deep-rooted conifers and other trees in this area face such problems as limited rainfall, and the hazard in drought periods of wind blowing unprotected soil and thus limiting land preparation for planting. Although most species require cultivation to reduce competition from weeds and grass, and to conserve the limited soil moisture, many soils are sandy, and in dry weather others are too erodible for tillage and cultivation. Moreover, it was found to be necessary to plant species from other areas, some of which proved to be less well adapted than others.

Through experience of ranchers and farmers and the cooperation of

State and Federal agencies, planting techniques and methods have been developed accordingly. Studies of plantings made throughout the years served as a guide in choosing tree species adapted to the various soils. It also was found that one kind of site preparation was not suitable to all soils. Cultivation methods had to be varied to fit. As a result, soils now are classified according to suitability for tree planting into 8 groups.

In one planting method, a seedbed is prepared, where possible, and a cover crop is planted. Trees are planted without further tillage into this cover with a machine, developed from earlier-type planters, that causes little disturbance to the cover so it will remain effective in protecting the soil against blowing. Many soil conservation districts are now buying such planters and hiring crews that plant trees for ranchers and



Cherry Soil and Water Conservation District tree planter.

Note:—The authors are, respectively, range conservationist, North Platte, Nebr., work unit conservationist, Oshkosh, Nebr., and work unit conservationist, Valentine, Nebr., all of the Soil Conservation Service.

farmers, at a fee that covers the cost of the equipment and labor.

The soils on some tree planting sites are too erodible to eliminate all existing cover, though enough grass must be eliminated to reduce competition in the planting row, if most species are to survive the first year and make good growth. Tree planting machines which were tried out to accomplish this result included one equipped with a lister-bottom furrow opener and a two-bottom plow; but there were shortcomings and complications in their use that led to the development of a device that opens a wide furrow in which to plant the trees. It has given such satisfactory results in the eyes of the supervisors of the 3,000-square-mile Cherry County Soil and Water Conservation District that the district had it manufactured.

The design of the furrow-opening machine takes into account the problem of slow growth made by conifers planted in furrows in the sod, although their survival was good. It removes a 15-inch strip of sod and discourages, with



Windbreak cedars planted on the Irlin McCray place in 1960 with combination furrow opener and planter designed by Donell Sylvester and owned by the Cherry SWCD.

an undercutting blade, another 5-inch strip on each side, thereby cutting down on competition from the grass long enough for the seedlings to root firmly and still give protection from sandblast. The furrow-opener is mounted under the midsection of a conventional tractor, and the tree planter is mounted on the rear three-point hitch, requiring but one planting operation.

In 1960 the crew and equipment planted 95,000 trees on 42 ranches in the Cherry Creek district.

Jim Kriha in the Garden County Soil and Water Conservation District is credited with having done an outstanding job of growing trees successfully in the area. Kriha has a 29-row farmstead tree windbreak and 3 wildlife plantings. Containing about 25 acres all together, they are looked upon as model plantings of their kind.

Before planting, he stubble-mulch-summer fallowed the seedbed to store moisture and reduce weeds. Then he established a sudan-grass or sorghum fall cover crop on the seedbed, both before and after planting, to reduce wind erosion and trap snow. In order to insure a good stand in his new plantings, he cultivated the trees to control weeds and save moisture, and replaced those trees that did fail to survive.

"You have to be willing to give the plantings the right care, if each individual plant is to make top progress," Kriha has found. "Fail in this and you don't get trees to grow here."

Many thrifty windbreaks—and some not so good—in the Nebraska Panhandle prove that Kriha and others using today's proven methods of planting and caring for their trees are right.

Experience has shown one or two rows of properly selected trees in field windbreaks to be as effective as wider belts in reducing wind velocity.

Hugh Bennett Professorship

North Carolina farmers are helping create a lasting memorial to a farm boy from Anson County who became one of the world's great agricultural leaders.

The memorial is the Hugh Bennett Professorship in Soils at North Carolina State College. It is dedicated to Hugh Hammond Bennett, former Chief of the Soil Conservation Service.

From May 8 through June 10, owners of ponds throughout North Carolina have been donating proceeds from fishing fees toward the professorship. From 10 to 30 well-managed, properly stocked farm ponds in each county have been designated as "Hugh Bennett Ponds." A \$1 fee is charged for fishing in these ponds.

The goal is to raise \$50,000 to \$100,000 to set up the professorship. An outstanding professor in soils at the State College will be named "Hugh Bennett Professor." He will receive an honorarium in a salary supplement from the earnings of the fund.

The Wildlife Society at its recent annual meeting in Washington, D.C., presented authors Byron L. Ashbaugh and Dr. Muriel Beuschlein of the book, *THINGS TO DO IN SCIENCE AND CONSERVATION*, with its annual Conservation Education Award in the communicative arts category. Mr. Ashbaugh is Director of Operations, Nature Centers for Young America, New York City. Dr. Beuschlein is Professor of Biology, Chicago Teachers College. (The book was reviewed in *SOIL CONSERVATION*, March 1961.)

About one-third of the earth's land surface is covered by forests.

PINE TREES FOR COTTON

Sound Land Use—Profit

By Dan Boone and Claude K. Compton

PINE trees are welcome money-makers and soil protectors for farmers in the Panola and Nacogdoches soil conservation districts in east Texas where cotton once was king. In both districts, many hundreds of acres of tree plantations are springing up each year, as the forerunner of a growing and permanent agriculture.

The Panola district once was covered with virgin timber, but the forest gave way to the ax, the Georgia stock, and the mule as demands for cotton increased over the years and as more forests were sacrificed for survival of the agricultural economy through the 1930's. After progressive farmers of Panola County voted their soil conservation district into being in 1941, they started a tree-planting

program. On the sound basis of using each acre of land within its capability, old wornout and eroded fields were planted to pine seedlings, with the object of creating a solid agricultural foundation through permanent conservation.

Before the landowners hardly realized it, the 10- to 12-year waiting period for starting to harvest their timber crop was over, and they began to thin their stands selectively, first harvesting the crooked, forked, or poorly topped trees wherever spacing permitted. The initial cutting averaged \$25 an acre; and the tall, clean timber left growing was valued at close to \$60 an acre.

Many of the old plantations now are in their third cutting cycle of



Four-year-old slash pine on the Ivan Ingram farm near Gary, Tex.

selective thinning, after 20 years. One of them is on the Ivan Ingram farm south of Carthage. His total past timber yield has been more than \$50 an acre; the growing stand is valued at \$118 an acre; and his future return is figured at more than \$10 an acre annually. Ingram has incorporated his 120 acres of various-age plantations into six compartments with his other timber acreage, and plans to harvest one compartment each year for an annual timber income.

A. R. Seharnagle, another member of the growing list of permanent timber conservationists in the Panola district, thinned his plantation selectively for the second time with similar results. He also



Pine seedlings hand planted in water furrows to conserve moisture, in the Panola SCD.

Note:—The authors are work unit conservationists, Soil Conservation Service, at Carthage, Tex., and Nacogdoches, Tex., respectively.

incorporates his plantations with his native timber to complete his timber operation.

In the deep-sand area in the northwest part of the district, you will find plantations of many ages scattered over an area that formerly posed a severe land-use problem and had an uncertain future. Here, too, landowners are converting an unprofitable tax liability into a retainable asset.

More than 1,000 acres of cropland is being planted to pine each year in the Nacogdoches district. A large percentage of this land is deep sand on which control of leaf-cutting ants and gophers must be provided, in addition to the grazing and wildlife protection that make up an important part of the landowners' conservation management program. Nacogdoches district cooperators must provide such protection for their woodlands if they are to realize maximum returns from their investment.

The old Nacogdoches-Rust district was one of the first to complete organization in Texas, in 1940. In the original work plan prepared by the district supervisors, it was estimated that uncontrolled grazing was practiced on two-thirds of the woodlands, and Texas Forest Service records show that more than 5,000 acres of woodland were being burned annually, compared to only 1,000 to 1,500 acres today.

One of the early woodland conservation steps taken by the Nacogdoches district was to establish a cooperative farm-forestry project on approximately 150,000 acres in its central part. Landowners in this area received high-priority assistance from all local, State, and Federal agencies working with the district in applying needed conservation measures to their woodlands.

As woodland conservation progressed, interpretation of the soils was made by the Soil Conservation Service, in terms of their suitability for growing wood crops. This information provides the district



A 15-year-old slash pine plantation on the A. R. Scharnagle farm in the Panola SCD.

cooperators with a basis for making their land-use decisions.

Today, managed grazing of farm woodlands in the southern pine belt is a part of the representative conservation plan. A typical example may be found on the Bill Scoggins farm, on which woodland grazing is utilized in combination with tame pastures. His woodland is grazed in the spring and early summer, when the woods grasses and browse plants are at their peak in food value; but grazing is excluded after July 1, when the cattle are kept on

tame pastures. This system allows the legumes in the tame pastures to reseed, while woodland forage is being utilized at a time when there is minimum danger of grazing damage to the trees.

Fully stocked plantations of slash or loblolly pine are ready for thinning in 12 to 14 years after planting, and generally yield about 5 cords of pulpwood to the acre in the first thinning. At the present market price, this represents a return of \$25 an acre. As establishment and protection costs generally will not



A 17-year-old slash pine stand on formerly cultivated land on the Jack Boatman farm in the Nacogdoches SCD.



Slash pine plantation belonging to the city of Nacogdoches, a district co-operator, is protected by access roads serving as firebreaks.

exceed \$18.50 an acre, the land-owner thus can expect to get back all of his planting cost, and some profit besides, from the first thinning of a fully-stocked stand.

The landowners of the Panola and Nacogdoches soil conservation districts are looking to a brighter future, thanks to tree planting as part of their permanent conservation programs.

More Trees For Tomorrow

More than 87 percent of the 2,137,460 acres planted to trees during the 1960 fiscal year were planted by tree farmers and other private owners, the U.S. Forest Service reports. Private landowners planted 1,837,392 acres of forest and 34,244 acres of wind-barriers. A total of 252 private, Federal, and State nurseries shipped 1,918,746,000 seedlings during the year; 34 forest industry nurseries accounted for 259,810,000 seedlings.

Thirteen States were listed as planting more than 50,000 acres each, led by Georgia with 330,196, and were responsible for 83 percent of the national total.

Woodland Clinics

For FFA-4-H Boys

By Leo L. Fisher

TOMORROW'S farm timber owners in eastern Texas are learning their conservation lessons early in annual woodland clinics for Future Farmers of America and 4-H Club boys.

Considerably more than 3,000 of these youngsters have taken part in such clinics, started in 3 soil conservation districts in 1957. Woodrow Harrell, Soil Conservation Service work unit conservationist at Gilmer, originated the idea as a solution to the need for such training in an area with approximately 50 percent of its land in woodland, a large percentage of which has lacked conservation use in the past.

The Northeast Texas Association of Soil Conservation District Supervisors, recognizing the need

for added emphasis, sponsored the first State clinic, for competition between boys in the top teams from the local districts. The 1960 State clinic was sponsored by the Texas Association of Soil Conservation District Supervisors. The number of clinics has increased each year. In 1960, 20 districts sponsored clinics, which now have spread into the southern part of the East Texas pine belt.

Objectives of the clinics include creating an awareness and understanding of the value of properly used woodland; teaching methods of developing and maintaining commercial woodlands; and familiarizing students with problems of management in woodlands.

The vocational-agriculture teachers and county agents in the



FFA and 4-H Club boys answering questions at one of the contest stations during State woodland clinic.

soil conservation districts take part from the start in planning for the clinics. First, the clinic rules and materials are explained, and a training date is scheduled with each interested group. Training, done in the field, covers techniques and explanation of planting, protection, cutting practices, timber identification and age, wildlife, timber volume and value, commercial wood products, and woodland grazing. Copies of the score sheet

Note:—The author is woodland conservationist, Soil Conservation Service, Mt. Pleasant, Tex.

and explanation sheets are furnished to teachers and county agents for their use in additional training of the boys.

In the contests among the FFA chapters and 4-H Clubs, three students comprise a team. Each FFA chapter or 4-H Club usually has five teams. The site of the contest is divided into three stations. Each team has a contestant in a group at each station, and the groups are rotated among stations. The applicable multiple-choice or completion answer is marked on

the score card at each station. Each group is allowed 15 minutes at each station, and the score sheets are turned in for grading.

The climax of the day comes with recognition of the three top-scoring teams. Awards usually consist of plaques or certificates of merit furnished by the sponsoring soil conservation district.

The clinics are helping to develop an understanding of the potential value of good woodlands and a greater appreciation of woodland as a natural resource.

Over-the-Row Cultivation Speeds Tree Care Job

By Elmer L. Worthington

North Dakota farmers and ranchers have increased their field windbreak plantings so fast in recent years that a speedier means of cultivating the young trees had to be found to stay ahead of the job of keeping them clean of weeds.

Nearly 3,000 miles of such windbreaks for wind erosion control were planted in 1960 alone, and final tabulations were expected to show 1961 plantings exceeding that record. Additional farmstead, feedlot, and wildlife plantings also were in near-record amounts. To the end of 1960, approximately 15,250 miles of field windbreaks had been planted in North Dakota.

Over-the-row cultivation was hit upon as the answer to the speed-up problem, starting in 1958 in the Turtle Mountain and a few other soil conservation districts. By 1960, windbreak owners in an estimated two-thirds of the State's

Note:—The author is woodland conservationist, Soil Conservation Service, Bismarck, N. Dak.



The lands of North Dakota soil conservation district farmers are protected with more than 15,000 miles of tree windbreaks like these in the Walsh SCD.

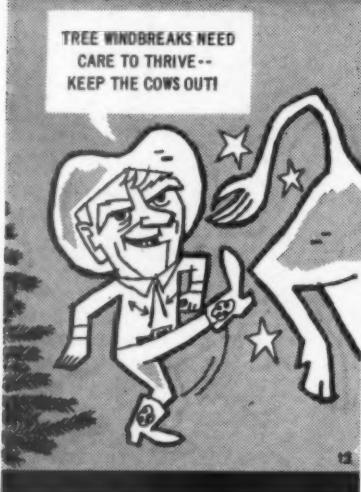
districts practiced this type of cultivation.

Over-the-row cultivation, done at the right time with the right kind of equipment, takes the place of hand hoeing or weeding in young windbreaks, and miles of tree rows can be worked quickly and easily in this manner. Several different implements have been used, the

most popular of which is the harroweeder equipped with 16-inch teeth.

The remodeled dump-type hayrake also does a good job, with its regular wheels replaced by smaller wheels, such as those from a sulky plow or horse mower. Other machines, like the side-delivery rake and finger weeder, also have been

The OLD RANCHER



used successfully. In some cases, the crossbars on these implements are wrapped with burlap so the young trees will not be damaged.

Best results in over-the-row cultivation have been obtained by cultivating before the weeds are more than half an inch tall, and by working the rows often enough to keep ahead of the weed growth, or once every three weeks under normal conditions. Cultivation is discontinued by about August 15, so the trees can harden up for the winter.

This system can be used only on young trees, but it is satisfactory for all species the first year after planting. Trees with a spreading habit of growth, such as Siberian elm, dropmore elm, willows, and Russian olive, usually cannot be cultivated this way after the first year. Depending upon the implement used, trees like green ash, American elm, caragana, plum, or lilac may be cultivated in this manner for 2 to 4 years.

Over-the-row windbreak cultivation works best at fast speeds, of up to 8 miles an hour. These implements have few moving parts, so

breakdowns are minor. The machine may be pulled directly behind the tractor or offset from the tractor to the side of the row. In the latter case, a field cultivator or tandem disk may be used at the same time, to cultivate the edges and between the rows. Some operators have used a pickup or other power instead of a tractor to pull the implement over the row.

Examination of many trees cultivated in this fashion has confirmed the fact that there is insignificant or no damage to the young trees, if the implement is used properly.

The longer the teeth on the implement, the more clearance it will have.

Clean-cultivated tree rows have better survival and growth, and young windbreaks reduce wind erosion and hold snow much sooner if they are kept clean of weeds that weaken or kill the trees, are unsightly, and scatter unwanted seeds in the area. North Dakota soil conservation district cooperators accordingly are operating on the principle that "if you take care of your windbreak when it is small, it will take care of you later on."

Hunting Preserve in Ohio

By David C. Brooks

SHOOTING preserves have existed in the eastern United States for many years, but only recently have they appeared in central Ohio. Around Columbus, a population explosion in recent years brought sprawling suburbs that have taken over many farms where hunters once enjoyed their sport. Good hunting areas are becoming fewer.

The large number of hunters is becoming a problem to the farmers who own most of the good remaining hunting areas. Public lands that have been opened for hunting are overcrowded. But a well-managed commercial shooting preserve seems to satisfy the need of many hunters from the metropolitan area.

H. L. "Bud" McKinley, owner

and operator of a 223-acre farm 10 miles southwest of Columbus,



Bud McKinley in one of the duck-shooting blinds on his hunting preserve.

Note:—The author is work unit conservationist, Soil Conservation Service, Columbus, Ohio.

opened his farm as a commercial shooting preserve in 1959. It was an immediate success.

Saturdays and holidays were soon scheduled full. Many parties during the weekdays were made up of professional people and businessmen who had a half-day off. Regular accounts were obtained from corporations who bring out some of their clients each week to hunt.

Bud offered quail, partridge, or pheasants for the hunters. The greatest demand was for pheasants, and toward the latter part of the season Bud was finding it difficult to supply the demand. Almost 3,000 pheasants were shot. This was approximately 70 percent of those turned loose on the preserve.

McKinley became a cooperator of the Franklin Soil Conservation District in 1956. His basic conservation plan, with recent revisions, has been the nucleus around which he developed his shooting preserve.

His plan called for five 36-acre fields to be fenced with multiflora rose. The multiflora rose was planted by the Ohio Division of Wildlife under a working agreement it has with soil conservation districts in Ohio. A two-acre pond was constructed. The U.S. Fish and Wildlife Service furnished the fish to stock the pond from their fish hatchery at Hebron, Ohio. The open areas in his woodlot were planted to pine and spruce and the woodlot is no longer pastured.

Today the crop fields make up his five hunting areas. Corn, soybeans, small grain, and meadow are still his basic crops. Two crop fields are rotated into meadow and small grain each year. The early fall hunting is concentrated in these two areas. The other three fields are planted to alternate strips of meadow and grain about 36 feet wide. Corn is the main grain crop and most of this is harvested and sold. A few strips are planted to grain sorghum and dwarf hybrid corn, which is left for game food and cover. Some of the



McKinley in one of his wildlife food and cover strips, with dwarf corn on the left and grain sorghum on the right.

sorghum is drilled in 14-inch rows with a grain drill, and the rest is planted in 42-inch rows with a corn planter.

In the areas that are strip-cropped, the grain provides food and cover. The meadow strips, from which hay is harvested in the summer, provide easy walking for the hunter and encourage birds to fly when the dog is sent in to flush them out of the cover strips.

An addition yet to be made in each of the five hunting areas is to plant clumps of trees and shrubs. These will provide gathering points for unharvested birds so the next hunting party will have a chance to get them. Although Bud's harvest of 70 percent of the birds released is above average, he is attempting to provide a still better environment for the birds as well as a good, safe environment for hunters.

Birds are placed in the hunting area no more than an hour before a hunting party is scheduled to hunt. The number of birds placed in the area depends on the number the scheduled party wants to shoot.

For the 1960-61 season Bud constructed a $\frac{1}{4}$ -acre duck pond that is now providing duck shoot-

ing. He has 1,000 mallard ducks that fly from a ramp at the duck pens and fly over his woods past his duck blinds to the pond.

Last year Bud sold his beef breeding herd of Angus cattle. His oldest daughter is raising Arabian horses. This is now the only livestock on the farm.

Nine months of the year Bud works for the Franklin County Board of Education as Director of Pupil Personnel. Gene Harbage assists Bud with the shooting preserve and takes over the management during weekdays when Bud is unable to be there. Gene, and several men in the neighborhood who are hired to lead the hunting parties, work a night shift in a factory so they can be available during the day.

The success of Bud's "Ramblin' Acres Shooting Preserve" is due partly to his knowledge of hunting. Bud started shooting clay targets in 1928, when he was 12 years old. He was runner-up in the North American Junior Championship Shoot at 16. He has won many other championships shooting clay targets and at pigeon shoots. He is the official gunner for numerous field trials in the Midwest.

Philip Jones Found Out That

Trees Won't Grow Just Anywhere

By Lester Fox

PHILIP H. Jones, Jr., found out early in the Christmas-tree game that trees won't grow just anywhere but have to be planted on land having the right soil and other conditions favoring them.

"You have to treat Christmas trees like any other crop and work with them the year around," Jones also explains out of his experience with 100 acres in trees on his 300-acre Christmas-tree and dairy farm

in the Fairfield County Soil Conservation District in Connecticut. "There seems to be an impression floating around that you can plant Christmas trees, wait four or five years, harvest a crop, and make a pile of easy money.

"Well, you can't do it that way any more than you can with corn, wheat, potatoes, cotton, fruit, or any other crop. Grow your Christmas trees on the right site, treat

them as you would a cultivated crop, and you'll make a profitable harvest of top quality. You'll get the best trees, and you'll get them one or two years earlier than the fellow who just plants and forgets about his tree crop."

Jones was Number 6 among the farmers who became cooperators with the Fairfield County district when it was organized in 1946, and received technical help from the Soil Conservation Service in developing and applying a coordinated soil and water conservation plan on his farm. He was elected a district supervisor in 1955, and chairman of the board beginning in 1958.

He grows no grain, but he has 80 acres in alfalfa and clover. Except for 25 acres of old woodland, the rest of the place is principally in pasture, most of it improved with plantings of top-quality grasses and clover, for his 40 milking cows and 20 head of young stock. There are 100,000 trees growing on the 100 acres of Christmas tree plantings, and he has another 100,000 trees coming along in his own nurseries elsewhere on the farm.

Jones, the fourth generation of the family to farm the same land, first learned back in 1938 about where not to try to grow trees.

"My grandfather suggested that Christmas trees would be a worthwhile crop," he recalls; "so I planted trees in that flat valley wetland area. My venture was a complete failure. The place was too wet for trees. Besides, I couldn't con-



Jones (right) and Albert E. Newby of the SCS check the soil in a block of Canadian balsam Christmas trees.

Note:—The author is information specialist, Soil Conservation Service, Upper Darby, Pa.



Jones tags a particularly good tree for Christmas cutting.

trol the weeds. Then in the winter the area iced over. That was the end of my trees.

"I reasoned that the site wasn't right. So I shifted to the hillsides that had been used—improperly, too—for pasture. In effect, I put the trees back where they belonged, where Nature had grown them in the first place. And in the wetland I have since planted reed canary-grass. It likes wet land. Since then, I've had no trouble as far as sites are concerned."

By 1947, District Cooperator Jones was ready to get into the Christmas tree selling business. That year, he sold 15 trees! In 1948, he sold 50. But, as a result of publicity, advertising, salesmanship, and showmanship—helped along by his wife and his mother—he has brought his sales to better than 3,000 trees a year. He also has sold as much as 5 tons of "greenery"—evergreen wreaths and pine cones—and sells enough of his nursery stock each year to cover the cost of planting from 10,000 to as high as 21,000 trees a year himself.

Jones grows the trees in his nurseries from seeds. He collects the

white spruce, white pine, and Scotch pine seed from mature trees on his own place, and buys the seeds of other species, like blue spruce from Colorado and Douglas fir from Washington. The seedlings, when they are big enough, are hand planted, 4 to 6 inches deep, because the land is too rough for machine planting.

He clears land for new seedlings with a brush saw, and follows with spraying to make sure the brush doesn't come back. He kills big "wolf" trees by girdling. He also sprays the growing trees to control diseases and insects. Jones has planted seedlings in some grassland fields, keeping the grass from smothering them by light grazing from June to September. He has

found the cows don't eat or trample the seedlings.

Jones is counting on son Terry to be the fifth generation to farm the old home place; but encroaching suburbia that has been crowding out farms in Fairfield and surrounding counties, with mounting land values and taxes, is a cause of concern. He is hopeful, however, that they can stay where they are and keep on farming.

"We like it here, and we like farming," he says. "We like to meet all those wonderful people who come to our farm every year to buy our Christmas trees and other products. We can't visualize any other kind of life in any other place that would give us so much pleasure and happiness."



CHAIRMAN Clarence Reenders of the West Ottawa (Mich.) Soil Conservation District Board of Directors is still going strong after

A Faithful Soil Steward

close to a quarter of a century of service to his district.

He was one of the original board members when the district was



Clarence Reenders

organized in 1938, and has been re-elected every three years since. He has been chairman since 1944.

The West Ottawa district, first to be formed north of the Ohio River east of the Mississippi, is on the eastern shore of Lake Michigan. Wind erosion was such a severe problem here in the 1930's that many farms were ruined for farming purposes, and roads were blocked by moving sand. The problems were greatest in the western seven townships which made up the original district.

Clarence's farm was in the middle of the blow area. He and other farmers realized that most of this land was not suitable for cropland and that trees should be planted to hold the shifting sand. His leadership helped to get early acceptance of tree planting.

Not the least of the problems was a shortage of planting stock. Because of the scarcity and poor survival of seedlings brought in, the district established its own nursery, the first in the State. The directors sold seedlings to the district cooperators at low cost, year after year, until now the sandy portion of the district is almost covered with trees. As one resident said, "Our children have grown up in a forest of our own planting."

Reenders has spread his influence in many ways. As a township supervisor and member of the county board, he saw to it that any land returned to public ownership because of tax delinquency is managed under a soil conservation plan.

He recognized early that instilling conservation in the minds of young people should be one of the chief goals of districts. Working closely with 4-H program leaders and the county superintendent of schools, he helped to arrange annual tours and conservation projects. Essay contests and work in the 13 separate school forests are part of the district's educational program. Membership on the County Agricultural Council

and his local school board put Reenders in a strategic position to help with worthwhile projects.

The veteran West Ottawa director's interests have not been restricted to his own district. His participation has been sought by other districts holding organizational meetings in surrounding counties.

Like most good soil stewards, Clarence also is active in church affairs. His wife says jokingly, "If he worked as hard in the activities of the church as he does at soil conservation, he would never have to worry."

In the building contracting business now, Reenders still maintains the home farm and is working with his sons in the operation of a 30-acre blueberry farm.

When the West Ottawa district celebrated its 20th anniversary, Reenders received an award from the Michigan State Soil Conservation Committee "in recognition of many hours of work and aggressive leadership." And last year, it likewise was something of an event when he chalked up 22 years without missing a board meeting.

—RONALD CHURCH

Community Push Gets Trees Planted

By Eudis Singleton



Former SCD Supervisor A. B. Combs (left) and son Gene measure 1 year's growth in their 5-year-old stand of white pine.

PERRY County in the eastern Kentucky coal fields region has a million more trees than it did a year ago and will have another million by the end of 1961 if everything goes as planned.

All together, landowners now have close to five million young trees growing on badly eroded, formerly "worthless" land. The county's tree-planting boom makes it the champion in the State. How did Perry County reach this position?

"It wasn't a streak of luck," says Denver Miniard, chairman of Perry County Soil Conservation District. "It took plenty of elbow grease and lots of determination."

When the Soil Conservation

Note:—The author is work unit conservationist, Soil Conservation Service, Hazard, Ky.

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Typical spoil bank of a strip-mined area before being planted to trees.

Service technician reported for work in the newly organized district in 1952, his job already was cut out. Information prepared by the Service showed that 90 percent of the 219,000 acres in the district was best suited to woodland, and that of this 197,000 acres, 126,500 acres needed to be planted to trees—approximately 60 million of them.

The first step taken by the district supervisors was to contact local bankers and other business people who might be interested in helping promote the tree-planting program. As a result, 20,000 tree seedlings were planted the first year. The next year, the SCS, the County Extension Service and Agricultural Stabilization and Conservation Committee, and the Kentucky Division of Forestry helped the district supervisors plan a concentrated effort to stimulate the tree-planting program, including the contacting of individual landowners. This effort resulted in 118,000 trees' being planted.

By 1955, the number of tree seedlings planted had increased to half a million, and the program seemed to be on its way. But plantings dropped to 321,000 and 307,000 in 1956 and 1957.

"Boys, we've got to do something," said Supervisor Bill Gorman. "We need to get more people to help."

In May 1957, the district board

called a meeting of all agricultural agencies in the county, businessmen, civic clubs, the Fish and Game Club, radio, newspapers, and others to plan ways of helping it promote the 1958 tree program. A goal of 500,000 trees was set, but the community response was so enthusiastic that it was upped to 750,000 at another meeting held in November.

Weekly gatherings of group members were held to evaluate progress, correlate efforts, and revise action as needed. The county Extension agent held informational meetings, attended by numerous 4-H Club members and adults.

The SCS work unit conservationist showed to SCD cooperators out on the land the areas best suited for growing trees; provided land capability maps, and technical guides developed by the Kentucky Forestry Committee for use in determining species to be planted on various sites; and provided on-site tree-planting instructions to insure proper establishment. In special cases, technical guidance was provided by the SCS woodland conservationist. The ASC office informed landowners of payments available for tree planting.

Representatives of the Kentucky Division of Forestry personally contacted landowners in all sections of the county, took tree orders, and gave them on-site assistance in tree planting. The district forester, accompanied by the SCS work unit conservationist, got substantial orders from large landowners. The district forester also kept the group informed as to tree species available.

The Vo-Ag teacher encouraged FFA boys to plant 50,000 trees as a part of their farm project. The Vo-Ag class also helped farmers in planting trees as a cooperative effort.

Important to success of the tree



Three-year-old loblolly pine planted on severely eroded Class VII land on farm of SCD cooperator W. B. Napier.

planting was the fact that landowners were informed of the reasons for planting, such as for erosion control and for utilizing idle land. Water management, wildlife, beautification, and other benefits of a properly planted stand of trees also were pointed out.

As a result of this coordinated effort, 770,500 trees were planted in 1958—well above the goal.

"Boys, we're on our feet again," said District Forester Walter Green. "Let's keep the ball rolling."

The ball has kept rolling, and in 1960 the total number of trees jumped by another half a million for the year's planting, to 1,283,000. And, prior to planting time, when district cooperators had ordered more than a million seedlings, it was expected that this number would be exceeded in 1961.

Dewey Daniel, banker and district cooperator, summed up this way: "Planting trees is the best insurance policy one can buy." Daniel has planted 400 acres to trees.

Land Not Farmed To Best Advantage

Canada's agricultural output could be doubled on less land than is now being farmed, in the opinion of Dr. P. C. Stobbe, director of the Canadian agriculture department's soil research institute.

"It is safe to say that at the present time too much of our land is not being used to its best advantage," he told the Senate land use committee.

Low-quality land should be converted to forests or grazing, he said.

Dr. Stobbe estimated that about 10 percent of Canada's 100 million acres of improved farmland consists of excellent agricultural soils, 85 percent is not being properly farmed, and 5 percent is just as poor in its productive capacity as land abandoned for farming.

Erosion Control in Woodland Harvest

By Robert A. Dellberg

THE Mendocino County Soil Conservation District in the redwood region of California has found several measures to be effective in coping with a high rate of erosion caused by a combination of heavy rainfall and steep slopes in harvested woodland.

District experience has shown that second-growth redwood, as well as old growth, can be logged successfully on a selective basis where the terrain permits. Here erosion control consists of simple measures, such as turnouts on skid trails and proper disposal of water from logging roads. On steeper land in pure Douglas fir stands, it sometimes is necessary to clear-cut the timber, in order to provide good conditions for regeneration of the stand. On such critical watersheds, it occasionally is necessary to apply more intensive control measures.

An example is on School House Ridge, near Covelo, a part of an 80-acre timber sale contract made for the benefit of the Covelo Indian Community. Intensive erosion-control measures were installed under supervision of the Bureau of Indian Affairs forester, with close cooperation of the loggers, to prevent damage to a watershed above a spring that supplies water for livestock. If these measures had not been used, serious soil losses and downstream flood damages would have occurred.

This tributary of the Middle Fork of the Eel River supported a dense, mature stand of pure Douglas fir. This stand was on a north-facing slope, so it is expected adjoining trees will reseed the area



This gully cut across a logging road in one storm carried away 1,000 cubic yards of soil and cost \$200 to repair. A half-hour's work with a bulldozer and installation of a culvert would have prevented it.

naturally. The only practical way to remove the mature timber was to clear-cut the area, because the slope averaged above 50 percent.

An intensive survey of the area to be logged showed that the upper and lower portions of the woodland were of such terrain and soil type that only simple and inexpensive erosion-control measures were needed. The steepest portions were on the middle of the slope, where it was evident that intensive erosion-control measures would be necessary.

It was decided to protect the soil on the gentler terrain by lopping



Terraces across the slopes on steep mountain land control erosion after logging.

and scattering the slash and constructing berms in skid trails to divert runoff safely into the slash and brush. The heavy accumulation of slash on the steeper portions was a hindrance to reproduction and a high fire hazard, and consequently would have to be burned, leaving that area rather bare. For erosion control, level terraces across the slope were planned.

The erosion control measures were installed according to plan, including three level terraces across the steeper slope, and turnouts on all skid trails. During the past two rainy seasons, they have functioned perfectly. The cost of all the erosion control measures ran about 35¢ a thousand board-feet of the trees cut. Although it is too early for final appraisal of their value, it appears they not only are effective but also are economical enough to be practicable in helping to keep this land in its most suitable and productive use.

servation of soil, water, plants, and wildlife. It likewise represents a new and ready source of reference material for professional and administrative people in these fields.

The 20 chapters deal with specific subjects, and were prepared by specialists therein. Together, they trace the growth of forestry as a national movement in the United States since its beginnings some 60 years ago, including progress made in silviculture, forest management, and other aspects of forestry. They also cover forestry research, education, and literature, and forestry activities in the Department of Agriculture and in other Federal agencies and the States, as well as industrial and world forestry.

A chapter of particular interest to soil and water conservationists is "Forestry on the Farm," of which T. B. Plair, head woodland conservationist of the Soil Conservation Service, is joint author with A. R. Spillers, head of the Forest Service's Division of Cooperative Forest Management. They trace the reversal in the approach to trees on the farm between 1900 and 1960. Then a farmer's primary concern was "how to get them out of the way of his plow," but today many landowners are growing timber as an important crop, with technical and other assistance from Federal, State, and private agencies.

The high percentages of United States farm acreage now in woodland and of farm woodland in the Nation's total timber acreage are emphasized in pointing up the advantages farmers have in growing wood crops today, though these advantages not always are completely recognized. Because such a large amount of the country's woodlands is in the hands of landowners with whom SCS people work in soil conservation districts and watersheds in providing technical help in soil, water, and plant conservation, this book is particularly recommended for their reading.

—PAUL LEMMON

Bankers Back SCD All the way

Bankers in the Denton-Wise Soil Conservation District in north-central Texas believe soil and water conservation pays—and back their belief with cold cash.

Every year since 1952, seven banks in the district have financed the district supervisors' trips to both State and National conventions of soil conservation districts. During that time, the supervisors have traveled thousands of miles—all expenses paid—keeping up to date with latest developments in soil and water conservation methods used throughout the Nation.

The district board annually holds an appreciation dinner to honor the bankers for their moral and financial support and their many other contributions in soil and water conservation activities. Bankers and their wives, newspaper editors, radio and TV reporters, and local Soil Conservation Service personnel and their wives attend.

Have You Seen?...

- *Careers in Conservation*, an informative booklet on employment opportunities in the different fields of soil and water conservation, both in and outside of government, issued by the Soil Conservation Society of America.

- *Help Keep Our Land Beautiful*, latest in the series of educational booklets published by the Soil Conservation Society of America, designed to tell the story of conservation to everyone. The 16-page "comic" booklet tells of an American family's motor trip through the United States and of its concern about the treatment of our soil and water resources. Others available in the series are: *The Wonder of Water*; *The Story of Land*; *Dennis the Menace and Dirt*; and *Down the River*.

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Secretary of Agriculture Orville L. Freeman signs a memorandum of understanding in his office with the Gerlach (Nevada) Soil Conservation District, as the basis of Department of Agriculture cooperation in carrying out the 1,521,600-acre district's plan for soil and water conservation work and improved land use by ranchers. Present at the signing were (left to right): Administrator Donald A. Williams of the Soil Conservation Service, Congressman Walter S. Baring and Senator Alan Bible of Nevada, Secretary Freeman, and Senator Howard Cannon of Nevada. "I consider the advancement of the soil conservation district movement as a most significant development in America because of the democratic philosophy which has been embodied in its organization," Secretary Freeman said.